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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/072,369	02/08/2002	Jon Maimon	2024.30	2582

7590

08/14/2003

Philip Schlazer
Energy Conversion Devices, Inc.
2956 Waterview Drive
Rochester Hills, MI 48309

EXAMINER

PHAM, HOAI V

ART UNIT

PAPER NUMBER

2814

DATE MAILED: 08/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/072,369

Applicant(s)

MAIMON, JON

Examiner

Hoai V Pham

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-- **Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --**
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-45 is/are pending in the application.
- 4a) Of the above claim(s) 22-45 is/are withdrawn from consideration.
- 5) ☐ Claim(s) 1-9 is/are allowed.
- 6) ☒ Claim(s) 10-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 7. 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of claims 1-21 in Paper No. 6 is acknowledged.

Specification

2. The disclosure is objected to because of the following informalities:
Page 6, lines 4, 18, and 20, "forth" should be changed to --fourth--.
Page 7, lines 5, 23, and 25, "forth" should be changed to --fourth--.
Page 8, line 7, "forth" should be changed to --fourth--.
Appropriate correction is required.

Claim Objections

3. Claim 1 is objected to because of the following informalities:
Line 7, "a opening" should be changed to --an opening--.
Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 10-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Reinberg et al. [U.S. Pat. 5,854,102].

With respect to claim 10, Reinberg et al. discloses a programmable resistance memory element, comprising:

a first layer of a conductive material (56) (see figure 10 and col. 8, lines 37-40);
a second layer of a programmable resistance material (58), wherein an edge of said first layer is adjacent to an edge of said second layer (see figure 12 and col. 8, lines 57-59).

With respect to claim 11, Reinberg et al. discloses that wherein substantially all electrical communication between said conductive material (56) and said programmable resistance material (58) is through said edge of said first layer and said edge of said second layer because Reinberg et al. discloses the programmable resistance material (58) contacting the conductive material (56) (see figure 12 and col. 8, lines 57-59).

With respect to claims 12-13, Reinberg et al. discloses that the first layer of a conductive material (56) is formed in the pore (54) and contacted the bottom and the sides of the pore (see figure 10 and col. 8, lines 37-54). Therefore, the first layer of a conductive material (56) is a sidewall layer or a liner.

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With respect to claims 14-15, Reinberg et al. discloses that the programmable resistance memory material (58) is a phase-change material comprising a chalcogen (chalcogenide) (see col. 6, lines 10-17 and col. 8, lines 57-65).

With respect to claim 16, Reinberg et al. discloses a programmable resistance memory element, comprising:

a layer of a conductive material (56) (see figure 10 and col. 8, lines 37-40);

a trench or pore of a programmable resistance material (58) adjacent to an edge of said layer of conductive material (see figure 12 and col. 8, lines 57-59).

With respect to claim 17, Reinberg et al. discloses that wherein substantially all electrical communication between said conductive material (56) and said programmable resistance material (58) is through said edge of said first layer and said edge of said second layer because Reinberg et al. discloses the programmable resistance material (58) contacting the conductive material (56) (see figure 12 and col. 8, lines 57-59).¹⁸.

With respect to claims 18-19, Reinberg et al. discloses that the layer of a conductive material (56) is formed in the pore (54) and contacted the bottom and the sides of the pore (see figure 10 and col. 8, lines 37-54). Therefore, the layer of a conductive material (56) is a sidewall layer or a liner.

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With respect to claims 20-21, Reinberg et al. discloses that the programmable resistance memory material (58) is a phase-change material comprising a chalcogen (chalcogenide) (see col. 6, lines 10-17 and col. 8, lines 57-65)

Allowable Subject Matter

6. Claims 1-9 allowed.

7. The following is a statement of reasons for the indication of allowable subject matter: the prior art of record fails to disclose the combination of a programmable resistance memory element structure recited in the base claim 1, including the combination of having: a second dielectric material formed over said conductive layer, wherein an edge of said conductive layer is exposed; and a third dielectric material formed over said edge, said third dielectric material having a opening formed therethrough uncovering a portion of said edge; and a programmable resistance material disposed in the opening.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoai V Pham whose telephone number is 703-308-6173. The examiner can normally be reached on 7:30A.M. - 6:00P.M..

9. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael M. Fahmy can be reached on 703-308-4918. The fax phone numbers

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for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7724 for After Final communications.

10. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

A handwritten signature in black ink, appearing to read 'Hoai Pham', with a long horizontal flourish extending to the right.

Hoai Pham
August 11, 2003